

Amendment Dated December 20, 2004
Serial No. 09/817,796

REMARKS

Reconsideration of the rejection set forth in the Office Action is respectfully requested. By this Amendment, claims 1 and 4-11 have been amended, and new claims 16-20 have been added. Currently, claims 1-20 are pending in this application.

Interview

Examiner Briny is thanked for the courtesies extended during the telephone interview on November 30, 2004. During the interview, the differences between the references and the claims were discussed, and several potential amendments to the claims were discussed. Applicants have amended the claims in a manner consistent with the discussion and respectfully request that the rejections be withdrawn. Applicants would welcome another opportunity to discuss this application with the Examiner if further rejections are believed warranted.

Objection to claims 5-9

The Examiner objected to claims 5-9 because of the use of the phrase "of claim of". Applicants have amended these claims as suggested by the Examiner to remove the second occurrence of "of" and respectfully request that the objection to these claims be withdrawn.

Rejection of claims 1, 3-6, and 8-14 under 35 USC 102 over Agawam

Claims 1, 3-6, and 8-14 were rejected under 35 USC 102 over Agawam (U.S. Patent No. 5,590,176). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

This application relates to providing an improved management system for a telecommunication switch. Telecommunication switches conventionally include a Management Information Base (MIB) which contains variables indicative of how the switch is operating and how it is intended to operate. An Operation, Administration, and Maintenance (OAM) system on the switch is generally provided to allow a network manager or other authorized person to obtain the values of or set the MIB variables to monitor and/or control operation of the switch. For example, a network administrator may want to monitor traffic on a given port, group of ports, or interface, or enable or disable a particular interface, port, or group of ports on the switch. To do so, the manager may access the switch's OAM system and poll or set one or more

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MIB variables to obtain the desired information and/or change the manner in which the switch is configured to operate.

Since a switch OAM system is responsible for the overall operation of the switch, the OAM system has conventionally been implemented in one location on the switch, for example on one of the switch's processing or control cards. As switches scale to handle higher amounts of traffic, the number of ports and interfaces has likewise scaled. This, in turn, has caused the number of MIB variables that must be recorded, stored, and otherwise managed, to increase accordingly. As additional services are provided, the number of MIB variables may increase even further. (See Specification at page 1-2). Additionally, as larger numbers of persons are allowed to interact with the management system, a larger amount of management traffic may be expected. The large number of manageable MIB variables and increased management traffic ultimately may cause the switch to encounter scalability issues, where the size of the switch is inhibited from increasing due to difficulties attendant to managing a larger number of MIB variables and increased amount of management traffic. (See Specification at page 2, lines 7-14).

Applicants discovered that this scalability issue could be at least partially reduced by taking a portion of the Operation Administration and Maintenance (OAM) processing operations from its traditional central location on one of the processor cards and offloading it to one or more of the network interface cards. (See Specification at page 8, lines 13-29). This allows the OAM processing capabilities of the switch to scale as traffic handling capacity is added.

Agawam does not teach or suggest a system of this nature. Rather, Agawam teaches a telecommunications switching system in which data path signaling is handled in a distributed fashion. The OAM system, in Agawam, is a central system that is not configured to be implemented in a distributed fashion. Specifically, in Agawam, a switching system 10 has a number of switching modules connected to a central communication module processor 40 which performs call processing and routing of phone calls. (Col. 3, line 55 to col. 4, line 3). An administration module 30 is connected to the communication module and is configured to handle OAM functions for the switching system (Col. 3, lines 42-54). Specifically, at col. 3, lines 48-54, Agawam states:

The administrative program includes all the functions of measuring and reporting all telephone call traffic through the switching system 10, collecting and recording billing information for telephone calls, evaluating the quality of the network service provided and managing the attached network of individual telephone lines and trunk lines to optimize the use of the attached network.

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Thus, Agawam like the art discussed in the background section of applicants' Specification, teaches a switching system in which the OAM functions are handled in a centralized manner by a central processor.

In the Office Action the Examiner took the position that Agawam teaches an arrangement for local trunk hunting in a distributed switching system. Trunk hunting is explained in greater detail in Agawam at col. 5, lines 4-52. As described in this section, trunk hunting is an aspect of network signaling that occurs when a call is set up. To distinguish the claims of this application from the system disclosed in Agawam, applicants have amended the claims to state that the management system is configured to perform Operation, Administration, and Maintenance (OAM) functions, and that the management request relates to at least one of the OAM functions. Amendments of this nature were discussed with the Examiner during the Interview. Applicants respectfully submit that Agawam does not teach a management system as recited in the amended claims and, accordingly, respectfully requests that the rejection of the claims over Agawam be withdrawn.

Applicants have submitted new claims 16-20, which depend on claim 1 either directly or indirectly, to further specify additional features relating to the management system of amended claim 1. Since Agawam fails to teach or suggest a network switch having these additional features, applicants respectfully submit that these newly submitted dependent claims are patentable over the art of record.

Rejection of claims 1 and 2 under 35 USC 102 over Greenstein

Claims 1 and 2 were rejected under 35 USC 102 over Greenstein (U.S. Patent No. 5,784,617). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

The Examiner explained in the Office Action that "the apparatus and methods disclosed by Greenstein are not indicated to be in the realm of telecommunication switchers", but stated that the limitation of a management system for a telecommunications switch was considered to be an intended use and, hence, was given no patentable weight. During the interview, applicants discussed this aspect of the rejection with the Examiner. In view of the discussions, applicants believe that the amended claims should overcome this rejection as well. Since Greenstein fails to teach a management system configured to perform operation, administration, and maintenance

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(OAM) functions for a telecommunications switch, applicants respectfully request that the rejection of claims 1 and 2 over Greenstein be withdrawn.

Rejection of claims 7 and 15 under 35 USC 103 over Agawam in view of Andres

Claims 7 and 15 were rejected under 35 USC 103 over Agawam in view of Andres (U.S. Patent No. 6,041,117). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

Claims 7 and 15 are directed to a feature of the application illustrated at box 22 on Fig. 1, and described for example at page 9, lines 18-30 of the specification. Specifically, as discussed in this portion of the specification, the protocol converter is configured to receive messages in any form of standard network management protocol, such as Simple Network Management Protocol (SNMP), Hyper Text Transfer Protocol (HTTP), or Command Line Interface (CLI) and extract and convert the received requests into generic switch resource access format messages, such as Pock's Sid and OAM operations.

In the Office Action, the Examiner has taken the position that Agawam does not indicate the type of call requests coming in or how they are interpreted by the receiving switching processors. Thus, the Examiner states, Agawam does not teach the use of a protocol converter in communication with the protocol agent, the first resource broker, and the selected request unit. However, the Examiner contends that Andres teaches such a protocol converter citing the Abstract at lines 18-27. Applicants respectfully disagree.

Andres teaches a system in which call processing, service processing, address translation, and routing processing, is moved from switching systems to a central common control module referred to as a Switch Processing Platform (SPP 17). For example, at Col. 5, lines 19-31, Andres states:

In accordance with the principles disclosed herein, an enhanced network arrangement is realized by de-coupling some of the call processing, service processing, signaling message processing, address translation, and routing processing from the switching systems, and generalizing the interface between the switching systems and the common control.

In addition, Andres states that OAM functions that have been previously handled by the different switching systems may be handled by the centralized Switch Processing Platform (Andres at col. 42-47).

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Thus, Andres teaches a way of taking functions that have conventionally been performed by different switches and centralizing these functions to common control. This consolidation of functions to a centralized processing system is opposite that which is proposed in this application. Accordingly, a person of ordinary skill in the art would not have been motivated to look to the teachings of Andres, since Andres teaches away from the solution adopted in this application.

Additionally, because Andres is attempting to connect switching platforms which may operate in disparate fashions to allow a central control to perform services for the different platforms, the command translator used by the central processor is used to convert from generic commands in use on the management network into specific commands that may be used by the various switching platforms. (See Andres at Col. 6, lines 32-35). Thus, Mandrake's translator also works in a manner that is opposite the instant protocol converter – Andres translates from a generic format to specific formats used by the various switching systems whereas the protocol converter in this application translates from multiple management protocols to a generic format understandable by the components of the network switch. Accordingly, for this additional reason, a person of ordinary skill in the art would not have been motivated to combine Andres with Agawam.

Claims 7 and 15 recite this difference. Specifically, Claim 7 recites that the protocol converter is "operable to convert the received management request into a generic switch resource access format" and claim 15 recites that "the step a) of receiving the management request further comprises converting the format of the management request from a request source format to a management system format." Accordingly, applicants respectfully submit that these two dependent claims are independently patentable, in addition to being patentable for the reasons set forth above with respect to the independent claims.

Change of Address

A change of correspondence address and a Power of Attorney revoking previous powers of attorney and appointing the undersigned as attorney of record in this application is enclosed. The Examiner is respectfully requested to enter the power of attorney and change the correspondence address in this application so that the undersigned will receive all future correspondence in this matter.

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Conclusion

Applicants respectfully submit that the claims pending in this application are in condition for allowance and respectfully request an action to that effect. If the Examiner believes an additional telephone interview would further prosecution of this application, the Examiner is respectfully requested to contact the undersigned at the number indicated below.

If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 502246 (Ref. NN-14114).

Respectfully Submitted

Dated: December 20, 2004



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APPENDIX A – RED LINE VERSION ILLUSTRATING CHANGES TO SPECIFICATION

paragraph starting at page 9, line 27, and ending at page 10, line 2:

In step 2, box 1002 in Fig. 2, the protocol converter 22 receives the message 101, then extracts and converts the OAM requests 100 embedded within the NMS protocol message 101 into a generic switch resource access format (e.g., Pock's Sid) and OAM operations 102. The possible OAM operations are Get, Get Next, Set, Create, Delete, and Transaction. In step 2a, box 1012 and 1013, the protocol unit resource broker 24 receives periodic CPU utilization information 106 broadcast from the available request units 10 via the ~~distributing~~ distributed computing infrastructure 7 and event server 9 by way of a request object server message 104.

paragraph at page 12, lines 8-10:

In step 12, box 1011 in Fig. 2, the NMS protocol agent 20 reformats the result for presentation using the user selected NMS protocol and returns the ~~reform-added~~ reformatted result 126 to the Network Management System 4.